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ABSTRACT

A variety of linkage components that can help build and maintain effective relationships between the worlds of work and education are identified, and barriers to the development of such relationships and techniques for overcoming them are described in this report. The first section lists different forms of industry/education cooperation and their characteristics, including cooperative education, work study, and apprenticeships; internships, clinical experience, required volunteer work, and simulations involving potential employers; employment of faculty in the private sector; teaching by business and industry specialists; student visits to work sites; technical and professional associations linking teachers and business specialists; joint activity on advisory committees and boards; and funded training programs. In the second section, potential problems and barriers to effective linkages between industry and education are presented. These include budget and cost factors; corporate and institutional policies regarding personnel, functions, and activities; legal restrictions, such as those imposed by civil rights legislation and minimum wage laws; interpersonal factors (e.g., personality conflicts and questions of status); long-range planning considerations, including the timing, sequence, and coordination of activities; and the neglect of management or learning principles. Finally, problem-solving and group interaction skills are posited as ways of overcoming these barriers and problems. (Author/HB)

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INDUSTRY-COLLEGE COOPERATION: NEW COMPONENTS, BARRIERS AND STRATEGIES

Presented at the 62nd Annual Convention of the American Association of Community and Junior Colleges
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This report identifies a variety of linkage components that will build and maintain effective interrelationships between the worlds of work and of higher education. It then describes potential problems or barriers that have prevented the development of such strategies, and techniques for overcoming such barriers.

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Linkage Components

Cooperative education, work-study, and apprenticeships. Within this general heading there are various options for scheduling the work and education cycles, and of assigning specific responsibilities for education and productive work evaluations under the prevailing terms of co-op, work-study, and apprenticeship programs. The most common characteristics include: a formal commitment by both the employer and the educational institution, specific job slots or positions to be filled by a continuing sequence of students, the expectation of valid productivity on the job and assurance that the learner has the necessary basic competencies needed for the specific work, compensation to the learner that is normal for the work, routine supervision and evaluations by the employer, the use of regular personnel policies and actions including hiring-firing and employee ratings, and a planned relationship between the experiential learning and the overall academic curriculum. The term co-op usually implies that the work is closely related to the occupational curriculum, while the term work-study often means that the experiential learning may be limited to attitudinal goals and an awareness of the world of work. Apprenticeships usually involve both goals in a highly structured and extended agreement relating to skilled trades.

Cooperative education and work-study programs should not be considered to be inexpensive strategies. It is essential that the institution provide a sufficient staff and budget for job development, placement assistance, and continuing communications among work supervisors, learners, and appropriate faculty members. The effort must extend to the program planning and administration.

For example, the selection of term/semester alternating cycles, versus morning-afternoon or other patterns must consider the employer concern that work positions are usually more efficient when the position is continuously filled. Another important consideration is the geographic extent of the job market needed to assure success. For example, the civil engineering technician co-op program at Rochester Institute of Technology, in Rochester, New York, has found it necessary and possible to set up some co-op work stations in Houston, Texas. The larger size and scope of program service area, together with the differing economic cycles of the Northeast and Southwest areas of the United States lead to this logical arrangement. Simultaneously at the same institution, a co-op program in computer science is concentrated in the Rochester, New York area, and their retailing program co-ops are extensively located in New York City and Boca Raton, Florida.

Other extended student experiences at work. There are many other arrangements which involve extended periods of time, that are formally planned, and that have specific curricular relations, but do not involve employer-employee status. These are used when it is not possible or desirable to pay the learner as an employee. Correspondingly, these do not involve established employer supervision and evaluation systems that are related to job performance responsibilities. These include internships, clinical experience, required volunteer work, and simulations that involve linkages with potential employers.

Internships are usually an opportunity to practice the functions that will be expected after completing a program. They are practiced under close

supervision and are best scheduled near the end of the program of study. In addition to allowing students to compare theory with practice, they have the merit of developing valid references for future employment.

Clinical experiences, most often occuring in the fields of allied health and social services, might be considered in other fields. Again the student responsibility can be limited to the role of learner. With inadequate planning, these arrangements tend to develop ambiguities regarding the student role and responsibility. This in turn results in wasted administrative effort to resolve problems that is much greater than the time and effort in original planning that would prevent the ambiguity.

Required volunteer work can also be an opportunity for establishing linkages with certain employing agencies and organizations. Simulations, computer based and other based, can also provide a linkage by using problems and data from business and industry.

Employment of faculty in the private sector. Given the great desirability of having faculty members maintain a current and valid knowledge of trends within their own specialization, a well planned system and structure can facilitate valuable work experiences. Planned industry-education systems can encourage and increase the extent of such work. In addition to work during vacations and consulting experience, part time or released time work can be considered. Faculty-specialist exchanges and temporary inter-sector loaning of personnel are also mutually beneficial strategies. It is important to remember that the faculty members can be in-service trainers as well as line employees and consultants. Cooperative arrangements can be of benefit to the private

sector also. Therefore, it is important to involve a structure that will assure a benefit to students. There is less value if these activities are considered to be primarily planned and/or perceived as a faculty fringe benefit.

Teaching by business-industry specialists. This includes opportunities for teaching courses as an adjunct faculty member, guest lecturing, and team/panel teaching. Considering the extent of such activities, it is relatively rare to find systems that insure the development of effective linkages through these practices. This strategy benefits the individual, the organizations, and the linkage, but requires a well planned process of selecting, assigning, and orienting the faculty member. The very common benefit of handling overload class sections should not blind a college to other services and benefits.

Student visits to work sites. A well known instructional strategy involves student visits to work sites. Field trips, tours, and shadowing experiences can be effective strategies. It is equally well known to faculty who have used this strategy, that the benefit/cost ratio is directly related to the amount of prior planning time. Inadequate planning usually results in having the standard public relations tour. In order to assure that curricular goals are efficiently served, it is necessary to consider the problems of time arrangements, total costs, liability for both agencies, and corporate policies regarding visitors. Curricular goals are not likely to be efficiently served. A cooperative structure can reduce the duplication of effort and encourage greater use of this strategy.

Student initiative projects and competitions. This process includes major student projects such as those that are often required in technical programs, inter-college student competitions, applied research conducted by

students, and instructional simulation games that emphasize student initiative. They have the particular value of facilitating a high degree of motivation for learning, and integration of overall knowledge. They can and should involve linkages with the private sector.

Technical and professional associations. Membership and active participation in occupational and civic organizations is another common linkage process. They are encouraged because they lead to improved relationships between representatives of education and of business/industry, as well as current understandings of technical developments. In addition to those societies where professionals from both sectors learn from each other, there are those that allow student memberships. In addition, there are student clubs and chapters of occupationally related associations. It is important to remember that employer representatives can be involved in such student chapters as advisors, speakers, liaisons, and resource persons. In all association activities, the private sector representatives can become more aware of the special challenges in education. The education staff can keep up to date and develop contacts. The students can learn new technical topics and the importance of being active in appropriate organizations.

Committees and boards. Advisory committees are another common linkage process. Whether they are for an academic program or a larger educational unity, they can be very effective. Among the factors needed for success are: sensitivity regarding the identification and contracting sequence of persons to be appointed, clarity of expectations regarding the services to be contributed and the term of the appointments, and an accepted concurrence on the real purpose of the committee. Appropriate purposes may be an external validation and demonstration of support, or may be to provide specific advice.

These are not the same, and ambiguity of purpose will diminish advisory committee effectiveness.

Another significant linkage opportunity lies in private sector participation on college and university boards of trustees. College governing boards, and coordinating boards are logical linkage mechanisms. Given the ideals for societal good that can result from such participation, and educational, political, and economic realities, it is appropriate to encourage and assist such representatives to become involved.

The participation of private sector representatives on coordinating and industry-education councils, as previously described, are essential. They are a linkage in themselves, and they can facilitate many other linkages.

Special events. A wide variety of annual, ad hoc, and/or occasional activities such as career nights (days) which allow workers in diverse occupations to talk with students of all ages, are examples of this process. Open house events, workshops, seminars, and conferences are other examples. There is a tendency to think only of education sponsored events, however, the reverse is also desirable. Educators may be invited to activities that are held by business and industry.

Staff activity involvement. Several college support operations, such as career planning, development, placement, and follow-up are distinctly improved by the involvement of business-industry representatives. Their participation will also strengthen other linkages. As an example, employer representatives may interview and recruit students, but a more valuable linkage can result

when the representative is encouraged to have lunch with some faculty members, and when placement data is shared to the extent legally possible.

Another opportunity occurs in the teaching of job seeking skills, interviewing techniques, resumé preparation, work values, and behaviors. The general concept of career education calls for effective interrelationships in these areas as well as infusion in the full curriculum.

Creative extensions. Creativity applied to normal operations can lead to extended linkages. An illustration of this relates to the normal and routine use of audiovisual software provided by industry. A linkage extension can result when the faculty member takes the occasion to correspond with the supplying corporation regarding the selection and use of the material.

Funded training projects. The many types of special courses and projects designed to meet specific business-industry training needs is a major linkage process and should be included in this inventory. This includes those funded by government agencies, foundations, and by corporations. They involve upgrading and retraining as well as the educational process of linking individuals with good work opportunities.

Linkage barriers and problems

If everyone agrees that industry-education linkage interrelationships are good for all, why don't they happen naturally? Why aren't there more of them? Why aren't they more successful? For many years, (perhaps beginning with the discussions of Plato), leisure-work-education relationships have been analyzed. Since World War II, our own society has seen hundreds of well stated positions advocating the establishment of linkage mechanisms.

Effective and efficient designs for action must take into account the complex and sometimes hidden phenomena that cause problems. This section will serve as a reminder of the types of barriers, and is included because of a tendency to overlook some of them or to assume that they are insurmountable. The listing is brief since they refer to major fields of theory and extensive research.

It is possible to find some sets of guidelines for solution sets. Finding quick solutions, however, is hard work. Indeed it is extremely important to stress that the process of establishing and maintaining industry-education interrelations requires that type of hard work, a careful attention to details, a sophisticated understanding of the two worlds, and contagious enthusiasm.

These are the fundamental elements needed to overcome barriers and reduce or eliminate problems.

Budget/cost factors. Linkage projects and processes can flounder on the simple lack of adequate money. More often, the problems involve the needs for accurate estimates of direct costs, properly calculated indirect cost charges, and management accounting principles. Many linkage projects involve diverse sets of funding sources, and durations that do not match prescribed fiscal periods. Grantsmanship challenges include an accommodation to funding source schedules that do not match those of the operating budget, as well as the need to directly relate budget items to project goals. An often overlooked problem is the fact that many business-industry budget cycles are quarterly and six months out of phase with conventional education budget cycles. A sophisticated planner, seeking business support for a project, must know which quarter is most propitious for financial collaboration.

Accounting and auditing rules are absolutely necessary in any organization. The problem and challenge is that of overcoming irrelevant rigidities which may cause problems for the financial affairs office, while insuring proper control and an audit path.

Corporate and institutional policies. It is equally necessary for any organization to establish policies and procedures regarding personnel, functions, and activities. Given the characteristics of human diversity and organization theory, the tendency for policies to become more detailed and rigid increases with the size and complexity of the organization. The entrenchment of such rigidities is likely to stifle creative ideas for linkages. There are corporations that require chain of command approvals for individual participation in formal external activities that may possibly involve corporate positions. There are educational institutions that require similar approvals for individual

contacts with certain corporations in order to protect other relationships such as fund raising. More common problems arise from policies that relate to hiring and master contracts with unions, or to site visits and technical developments.

It is often necessary and possible, to show that certain policies can be waived on the basis of a greater need that would result from a linkage project.

Legal restrictions. A common barrier to new linkage processes arises from legislative acts and judicial interpretations. Minimum wage and related laws, civil rights legislation, liability and workmans compensation are examples. Recognizing the fundamental need for such legislation and insurance factors, a problem sometimes arises in erroneous perceptions regarding the rigidity of such limitations. Timidity and incomplete knowledge sometimes allows persons to forget that one basis for our legal system is the recognition that laws, constitutional principles, and precedents may result in letter of the law conflicts. It is necessary for a planner to clearly understand the legal intent of related legislation, the trend of interpretations, and the levels of higher law, to propose certain risks in creating linkages. At the same time, it is wasteful to spend time on a plan that has an inherent legal problem.

One potential barrier can result from fears regarding civil rights requirements. Individuals in either business or in education are sometimes hypersensitive about linkage projects that may embarrass either group. There may be fears about project participant representation by race, sex, age, and/or handicapping conditions. Even though both groups share the basic goals

of eliminating prejudice and advancing equality of opportunity, there may be a perception that a project will focus attention on some incomplete attainment of such goals; or that the project design could perpetuate harmful stereotyping. It needs to be noted that careful planning can instead advance the goal attainment. Linkage processes can help demonstrate that many disabled persons can perform functions thought to be impossible; that women can really be effective in non-traditional fields; that age diversity can be an advantage in real productivity, and that the project is a proof of affirmative action for racial minorities.

Semantic barriers. It is well known, but often forgotten, that semantics can defer, side track, or kill a good linkage idea. Many terms, (such as training, communications, accountability, responsibility, and coordination), have different meanings in the worlds of work and of education. In addition, there are individuals in both worlds who have personal associations with certain terms that create confusion in language interpretations. Emotional barriers, screens, and/or translational ambiguities can be identified by continuous dialog. Tragedies in linkage planning occur when feedback and checking communications are neglected.

Interpersonal factors. Personality conflicts, status questions, hidden agendas, and individual motivations often cause problems in linkage processes. These are distinctly different from semantic interpretations that can be solved by communication cycles. They are more deeply rooted in psychological and sociological characteristics. Individual insecurities, temporary depres-

sions, and phobias can very well side track ideal linkage efforts. A relatively weak understanding of group dynamics, small group theory, leadership emergence, and/or insensitivity to personal needs can also hinder linkages. The authors remember with regret the occasions when they permitted an idealist, lacking such sensitivities, to wreck a good linkage idea by ignoring visible hazards. The planner does not have to be a psychiatrist or a "touchy-feely" therapist, but must be relatively aware of the potential for such barriers.

Long range planning considerations. The timing, sequencing, and coordination with other functions and/or agencies, can pose another potential barrier. Coordinated longer range planning is necessary to effect efficient staffing/budget commitments. Good state plans for education, and for industry goal accomplishments, should include accommodations for industry-education alliances. Forecasting is an art and a science, and ineffective planning can forestall good linkage processes. It is important to foresee the potential for major linkage components in both business and education planning. This forecasting calls for extensive communications between business and education, and for sophistication in futurism. Informal and structured systems are particularly needed to accommodate such planning.

Hidden but real barriers. Separate and distinct from the predictable barriers listed above, are individualistic conflicts. These would include personal loyalty conflicts, perceived 'turf' assumptions, and the individual stereotyping that occurs in the real world. These are rarely visible barriers

but result from experiences. Since they are not readily visible, they are more difficult to attack. They include differential constituency loyalties wherein a cooperating link may owe loyalty to an unseen coalition, assumed prerogatives of style or substance, and/or inaccurate conclusions based upon prior 'bad' experiences. These kinds of perceptions are easily transmitted to significant groups without a corresponding explanation of the initiating concern.

The diagnosis and solution of problems resulting from prior antecedents is difficult but is still possible through sensitive probing. More permanent and pervasive obstructions call for processes that by-pass or remove the individual from the linkage process.

Neglecting management/learning principles. In addition to the basic principles listed above, good management and experiential learning principles are needed. Inadequate attention to the components of evaluation, communication of expectations, leadership, and/or the setting of objectives can lead to barriers for linkage processes. Generalizations of experiential learning, opportunities to test hypotheses under controlled situations, and translation into useful principles, are essential in any linkage effort.

A linkage plan that has insufficient attention to management and/or experiential learning components creates problems and barriers.

General observations. Some readers may feel that the listing of processes and problems is elementary and superficial. Others may feel that the variations and problems are insurmountable. It is necessary to avoid both extremes; to consciously and continuously attend to the described details, and to generate an environment of positive confidence in the great potential for industry-education cooperation.

Much of the potential is currently lost in the area of in-house training. Business/industry training by employers is a major expenditure activity and is becoming even more significant with the development of human resource development concepts. In the authors' view, the efficiency advantages of college contributions are being neglected because of perceptions and facts of college rigidities. The facts and/or perceptions of faculty unwillingness to deal with corporate needs is a deterrent that can often be overcome. While higher education should always be concerned with the individual and his or her future, these concerns can usually be accommodated in activities that also meet organizational goals for profits and productivity.

Among the skills and knowledge, needed to overcome barriers, are the abilities to properly select and use different techniques such as the: Delphi method, nominal group process, task force, transactional evaluation, charette, and consensus. There are different processes for the different purposes of: problem solving, two way communication, decision making, governance, therapy, setting priorities, and developing constituencies.

Linkages involve groups and therefore effective leadership requires a usable knowledge of different intra-group roles. Task roles include: initiating, informing, clarifying, summarizing, and reality testing. Maintenance roles involve: harmonizing, gate keeping, consensus testing, encouraging, and compromising. These are needed to minimize the effect of blocking roles such as: aggression, obstinance, domination, side talk diversions, and special interest protection.

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